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EXAMINER

KINNEY, ANNA L

ART UNIT PAPER NUMBER

1731

DATE MAILED: 07/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

5

<b>Office Action Summary</b>	<b>Application No.</b> 10/689,665	<b>Applicant(s)</b> LAINE ET AL.	
	<b>Examiner</b> Anna Kinney	<b>Art Unit</b> 1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11, 12, 14-19 and 26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11, 12, 14-19 and 26 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed May 5, 2006 have been fully considered but they are not persuasive.

In response to applicant's argument that Reinhall has no thickened pulp layer that is pushed in essentially axial direction along the filter surface (Remarks, pg. 14), the Examiner disagrees. Reinhall discloses a stirrer with inclined blades that rake the wall of the cylinder (col. 2, lines 28-35), scraping pulp material collected on the interior wall (i.e., a thickened pulp layer) which is conveyed (i.e., pushed) downwardly (i.e., in an essentially axial direction along the filter surface; col. 2, lines 49-57).

In response to applicant's argument that technical issues would preclude that the cleaning member of one reference is equivalent to the cleaning member of the other (Remarks, pg. 14), Gervasi establishes the equivalence of using a worm or a set of blades carried by a rotating shaft (col. 3, lines 26-35).

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning (Remarks, pg. 15), it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that Gervasi discloses a precoat filter (Remarks, pg. 15-16), whereas the claimed method has no precoat layer on the filter surface, the claims as written do not exclude a precoat layer. The limitations of claim 1 allow for forming a thickened pulp; allowing *a layer* of thickened pulp to form on the filter surface; and wiping the layer of thickened pulp off the filter surface (claim 1, lines 11-15). Although only one layer is recited, the claim as written allows for the possibility of additional layers of thickened pulp that are not wiped off. Furthermore, Gervasi discloses that a filter cake could be preformed from diatomite, with the deposited turbidity continuously removed (col. 3, lines 52-58) rather than establishing a precoat layer of the solids suspended in the liquid to be filtered. Finally, Gervasi allows for adjusting the thickness of the filter cake, but does not require any specific thickness to be maintained (col. 5, lines 29-34). Therefore, the Examiner construes this to mean that the thickness of the filter cake may be adjusted to essentially 0.

In response to applicant's argument that Gervasi does not disclose that the space between the worm and the shaft can be changed (Remarks, pg. 16), the Examiner disagrees. Since the width of the worm does not change, the outer diameter of the worm is related to the inner space between the worm and the shaft. If one increases, the other must decrease.

In response to applicant's argument that the claimed space between the shaft and the cleaning member is not intended to enable surplus cake formed to be removed and conveyed to the discharge (Remarks, pg. 16), the fact that applicant has recognized another advantage which would flow naturally from following the suggestion

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of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). In fact, the section of Gervasi cited by the applicant does not indicate that the space between the shaft and the worm is used to convey the surplus cake, it simply indicates that the worm removes and conveys the surplus cake.

### ***Specification***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Method for the controlled thickening of low consistency fiber suspensions.

### ***Claim Objections***

Claim 5 is objected to because of the following informalities: the word "sped" in the second line should be "speed". Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 15 and 26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims include a limitation for "a process

signal obtained from a previous or later process stage". The Examiner found no reference to such a process signal in the specification. In addition, with respect to claim 26, the Examiner found no reference to regulating the flow of incoming pulp.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Regarding claims 1 and 26, the term "essentially" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention.

Claims 5 and 6 recites the limitation "the thickened layer of pulp" in line 2 of each claim. There is insufficient antecedent basis for this limitation in the claim. Previous recitations to a layer of pulp have been made to a "layer of the thickened pulp". The term as recited in claim 1 suggests that additional layers of thickened pulp might also exist, which does not appear to be the applicant's intention. The Examiner recommends making the limitation in claims 5 and 6 consistent with previous recitations.

Regarding claim 7, the Examiner finds the reference to "the *discharge* end of the apparatus" unclear as it relates to "the *feeding* speed of the screw" and "the flow speed of the *non-thickened* pulp". The two latter limitations appear to have more relation to the "feeding end" of the apparatus. The speed of pulp flow at the discharge end should be of thickened pulp, and the speed of the screw at the discharge end should be a discharge speed.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 5-6, 8-9, 11-12, 14-16, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reinhall (U.S. Patent 3,682,444) in view of Gervasi (U.S. Patent 4,085,050).

With respect to claim 1, Reinhall discloses a method for controllably thickening a pulp (Abstract, lines 1-4 and 12-19) comprised of a low consistency fiber suspension (col. 2, lines 43-45), said method comprising the steps of: introducing a pulp comprised of a low consistency fiber suspension pulp (col. 2, lines 43-45) into a pre-thickener apparatus (Fig. 1, item 10) at a feeding pressure (col. 1, lines 23-25), the pre-thickener apparatus having a filter surface (col. 1, lines 12-17), a shaft and a cleaning member attached to the shaft (col. 2, lines 28-32), removing liquid from a portion of the pulp (col. 1, lines 12-17) in said pre-thickener apparatus by means of the feeding pressure of the pulp into the pre-thickener apparatus (col. 1, lines 23-25) to form a thickened pulp, a filtrate (col. 2, lines 46-53), and an essentially unthickened pulp (col. 2, lines 37-49), allowing a layer of the thickened pulp to be formed on the filter surface of the pre-thickener apparatus, wiping the layer of the thickened pulp off the filter surface of said pre-thickener apparatus with the cleaning member by pushing the layer of the thickened pulp by the cleaning member in an essentially axial direction along the filter surface to

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the discharge end of the pre-thickener apparatus (col. 2, lines 49-57), discharging from the pre-thickener apparatus the thickened pulp wiped from the layer of the thickened pulp and the filtrate (col. 2, lines 49-57); guiding a part of the essentially non-thickened pulp to a portion of the filter surface being wiped by the cleaning member (Fig. 1); regulating the flow speed of the pulp in the pre-thickener apparatus (col. 3, lines 2-11) by means of valves for the filtrate (Fig. 1, item 68) and the thickened pulp (Fig. 1, item 60); and controlling the thickening of the pulp in response to input power of the cleaning member (col. 3, lines 2-11).

Reinhall does not disclose expressly allowing the essentially non-thickened pulp to flow through a space defined between the shaft and the cleaning member.

Gervasi discloses a method for controllably thickening (col. 2, lines 36-45) a solid suspended material (col. 1, lines 15-19), comprising introducing a solid suspended material (col. 3, lines 22-25) into an apparatus having a filter surface (col. 4, lines 17-20), a shaft, a cleaning member attached to the shaft, and a space defined between the shaft and the cleaning member (col. 5, lines 29-34), and allowing the essentially non-thickened solid suspended material to flow through the apparatus from the feeding end to the discharge end via the space defined between the shaft and the cleaning member (Fig. 1).

Reinhall and Gervasi are analogous art because they are directed to a similar problem solving area, that of removing a layer of thickened material from a filter surface.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a cleaning member with a space between the member and the



shaft as described by Gervasi in the thickener of Reinhall to obtain the invention as specified in claim 1.

The motivation for doing so would have been that it enables the surplus cake formed to be removed and conveyed to the bottom continuously (column 3, lines 37-39).

With respect to claim 8, Reinhall discloses using a pump so as to create the feeding pressure of the pre-thickener apparatus (column 1, lines 23-25).

With respect to claim 9, Reinhall discloses regulating the flow of filtrate (column 3, lines 2-11) with valves (Figure 1, item 32).

With respect to claim 11, Reinhall discloses regulating the consistency of the thickened pulp to a desired value by changing a flow amount ratio between the thickened pulp and the filtrate (column 3, lines 2-11).

With respect to claim 12, Reinhall discloses regulating the consistency of the thickened pulp to a desired value by changing a flow amount ratio between the low consistency pulp to be thickened and the filtrate (column 3, lines 2-11).

With respect to claim 14, Reinhall discloses that said step of controlling the thickening of the pulp comprises maintaining a constant pressure difference over the filter surface (column 3, lines 2-16).

With respect to claim 15, Reinhall discloses controlling the thickening of the pulp in response to a process signal obtained from a later process stage (col. 3, lines 26-50).

With respect to claim 26, the rejections to claims 1, 9, and 15 are applied.

With respect to claim 16, Gervasi discloses that the cleaning member is rotated by a variable speed motor (column 4, lines 25-30), and that the speed is proportional to the speed of deposition (col. 3, lines 40-42).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to optimize the rotational speed of the cleaning member to achieve or maintain optimal thickening.

With respect to claims 5 and 6, Reinhall and Gervasi do not disclose expressly rotating the cleaning member at a rotational speed sufficient to create a flow speed for the thickened layer of pulp of less than 3 m/s towards the discharge end of the pre-thickener apparatus, or between 0.2-1.0 m/s, preferably about 0.5 m/s. However, Reinhall does disclose that if the stirrer meets increased resistance, the power required to operate the motor will be increased (column 3, lines 2-11). The Examiner considers this to mean that the stirrer is operated at a preselected fixed speed. Reinhall further discloses adjusting the rate of dewatering to achieve a predetermined level of concentration (column 3, lines 11-20).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to optimize the flow speed of the pulp through the apparatus. The motivation would have been to maintain the concentration of the fiber pulp at a predetermined level with only small deviations (column 1, lines 55-58). With respect to claim 6, the Examiner has interpreted the claim to include the wider range of 0.2-1.0 m/s.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reinhall and Gervasi as applied to claim 1 above, and further in view of Iyengar (U.S. Patent 4,582,568).

With respect to claim 7, Reinhall and Gervasi do not disclose expressly that the cleaning member comprises a rotatable screw, and wherein the feeding speed of the screw and the flow speed of the non-thickened pulp are essentially the same at the discharge end of the apparatus. However, as discussed in the 35 U.S.C. 103(a) rejection of claim 1, above, it would have been obvious to optimize the flow speed of the pulp. The feeding speed is determined by a pump (column 1, lines 23-25), and would similarly be obvious to optimize.

Iyengar discloses that the cleaning member comprises a rotatable screw (column 1, lines 38-40).

Reinhall, Gervasi, and Iyengar are analogous art because they are all directed to a similar problem solving area, that of removing a layer of thickened material from a filter surface.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a rotatable screw as described by Iyengar in the thickener of Reinhall and Gervasi to obtain the invention as specified in claim 7. The motivation would have been that the screw contributes to pulp flow (column 1, lines 42-43).

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reinhall and Gervasi as applied to claim 1 above, and further in view of Smook (Smook, G.A.,

Handbook for Pulp & Paper Technologists, 1982, TAPPI and Canadian Pulp and Paper Association, p. 109) and Iyengar.

With respect to claim 2, Reinhall and Gervasi do not disclose expressly supplying pulp to said pre-thickener apparatus from a screen, the screening consistency of which is about 2 - 4 %.

Smook discloses supplying pulp to a thickener from a screen (page 109, column 2, lines 2-5).

Iyengar discloses supplying pulp to a thickener in a consistency range of 2 to 12% (column 3, lines 36-38), which contains one endpoint from the claimed range of 2-4%.

Reinhall, Gervasi, Smook, and Iyengar are analogous art because they are all directed to a similar problem solving area, that of controlling the consistency of a suspension.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to supply pulp from a screen as described by Smook in the consistency range described by Iyengar to the thickener of Reinhall and Gervasi to obtain the invention as specified in claim 2.

The motivation to do so would have been that following low-consistency operations such as cleaning and screening, it is necessary to thicken the stock prior to the next process operation ((page 109, column 2, lines 2-5) and that thickening of suspensions can be grouped into several solid ranges, namely, 0.5 to 3%, 3 to 10%,

and 10 to 40% (Iyengar, column 1, lines 17-19). The suspension as fed into the dewaterer has a very low pulp concentration (Reinhall, column 2, lines 43-45).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reinhall and Gervasi as applied to claim 1 above, and further in view of Henricson et al (U.S. Patent 5,147,504).

With respect to claim 3, Reinhall and Gervasi do not disclose expressly that the pulp thickened by the pre-thickener apparatus is taken into a filter, the feeding consistency of which is 3 - 6 %.

Henricson et al disclose thickening pulp prior to processing pulp in a filter (column 3, lines 36-56) with a feeding consistency of 3% or 4.5% (column 3, lines 48-51), which contains two specific points (3, 4.5) within the claimed range of 3-6%.

Reinhall, Gervasi, and Henricson et al are analogous art because they are all directed to a similar problem solving area, that of controlling the consistency of a suspension.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the thickener of Reinhall and Gervasi before the filter described by Henricson et al to obtain the invention as specified in claim 3.

The motivation for doing so would have been that the low consistency of the fiber suspension requires a large filter (column 3, lines 36-41).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Reinhall, Gervasi, Smook, and Iyengar, as applied to claim 2 above, and further in view of Henricson et al.

With respect to claim 4, Reinhall and Gervasi do not disclose expressly that between the screen and the filter the consistency of the pulp is raised by said pre-thickener by 1 - 4 %.

Henricson et al disclose that the consistency of pulp without thickening is approximately 1.5% (column 3, lines 41-44). As noted in the rejection of claim 3, above, Henricson et al disclose an inlet consistency of 3% or 4.5%. Therefore, the consistency of the pulp is raised by a pre-thickener is 1.5-3%, which contains two specific points (1.5, 3) within the claimed range of 1-4%.

Reinhall, Gervasi, Smook, Iyengar, and Henricson et al are analogous art because they are all directed to a similar problem solving area, that of controlling the consistency of a suspension.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to require a consistency increase as described by Henricson et al from the thickener of Reinhall, Gervasi, Smook, and Iyengar to obtain the invention as specified in claim 4.

The suggestion would have been that if the consistency of the pulp entering the filter is 3%, only 400 tons of liquid have to be removed and if the inlet consistency is 4.5%, only 233 tons of liquid have to be removed (column 3, lines 48-51).

Claims 17, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reinhall and Gervasi as applied to claim 1 above, and further in view of Campbell (U.S. Patent 3,833,465) and Smook.

With respect to claims 17 and 18, Reinhall and Gervasi do not disclose expressly using said filtrate for dilution in a previous process stage, or in the same process stage.

Campbell discloses using said filtrate for dilution in a previous process stage and in the same process stage (column 3, lines 60-66).

With respect to claim 19, Reinhall, Gervasi, and Campbell do not disclose expressly separating fibers from said filtrate by a fiber separating means prior to reusing the filtrate. However, at the time of the invention, it would have been obvious to a person of ordinary skill in the art that some fibers would separate from the filtrate in the filtrate chest (Figure 1, item 13) by means of gravity.

Reinhall, Gervasi, and Campbell are analogous art because they are all directed to a similar problem solving area, that of controlling the consistency of a suspension.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to reuse thickener filtrate as described by Campbell from the thickener of Reinhall and Gervasi to obtain the invention as specified in claims 17, 18, and 19.

The motivation would have been that the initial filtrate is relatively cloudy and can be segregated for dilution uses (Smook, p. 111, column 2, lines 9-11).

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. 3,076,610 shows a thickening worm press for pulp preparation.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anna Kinney whose telephone number is (571) 272-8388. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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